ENTOMOLOGICAL NEWS

JUNE 1954

Vol. LXV **No. 6**

CONTENTS

Geijskes—The nymph of Neonura joana Will 141

Hall—Biology of Bombyliidae, and new species 145

McDonald—Rearing Diptera from moist humus 149

Current Entomological Literature 151

List of titles of journals 166

PUBLISHED MONTHLY, EXCEPT AUGUST AND SEPTEMBER, BY
THE AMERICAN ENTOMOLOGICAL SOCIETY
PRINCE AND LEMON STS., LANCASTER, PA.
AND
1900 RACE STREET, PHILADELPHIA 3, PA.

Subscription, per yearly volume of ten numbers: $5.00 domestic; $5.30 foreign; $5.15 Canada. Entered as second-class matter April 19, 1943, at the post office at Lancaster, Pa., under the Act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for in paragraphs (d-2), Section 34.40, P. L. & R. of 1948, authorized April 19, 1943.

ENTOMOLOGICAL NEWS

ENTOMOLOGICAL NEWS is published monthly, excepting August and September, by The American Entomological Society at Prince and Lemon Sts., Lancaster, Pa., and the Academy of Natural Sciences, 1900 Race Street, Philadelphia 3, Pa., U. S. A.

PHILIP P. CALVERT, Editor Emeritus. R. G. SCHMIEDER, Editor. Editorial Staff: E. J. F. MARX, V. S. L. PATE, M. E. PHILLIPS, and J. A. G. REHN.

Subscription price, per yearly volume of 10 numbers: Domestic, $5.00; Foreign, $5.30; Canada, $5.15—U. S. Currency.

SUBSCRIPTIONS: Communications and remittances to be addressed to **Entomological News, 1900 Race Street, Philadelphia 3, Pa.**

ADVERTISEMENTS: Rate schedules available on request. Address, **Fred B. Jacobson, Advertising Manager, Entomological News, 1900 Race Street, Philadelphia 3, Pa.**

MANUSCRIPTS and all communications concerning same should be addressed to **R. G. Schmieder, Zoological Laboratory, University of Pennsylvania, Philadelphia 4, Pa.**

The receipt of all papers will be acknowledged and, if accepted, they will be published as soon as possible. If not accepted, authors will be so advised and postage requested for return of manuscripts. Articles longer than six printed pages may be published in two or more installments, unless the author is willing to pay for the cost of a sufficient number of additional pages in any one issue to enable such an article to appear without division.

ILLUSTRATIONS. Authors will be charged as follows: For text-figures, the cost of engraving; for insert plates (on glossy stock), the cost of engraving plus the cost of printing. The size of text-figures or plates when printed must not exceed 4 x 6 inches.

All blocks will be sent to authors after publication. It is not advisable to print half-tones as text-figures.

TABLES: Authors will be charged the setting of all tables exceeding 2 inches in height.

SEPARATA: Twenty-five extras of an author's contribution will be given free. They will be "run of form," without removal of extraneous matter, folded but not bound, uncut and without cover.

Authors wishing more than the 25 separates must so advise the Editor or the printer. See bottom of this page. The Editor requests that authors state the number of separates desired in a letter accompanying their manuscript.

SEPARATES of articles without covers, without extraneous matter, will be furnished by the printer at the following prices: 1–4 pages, 25 copies, $3.13; 50 copies, $3.13; 100 copies, $3.75. 5–8 pages, 25 copies, $5.00; 50 copies, $5.00; 100 copies, $5.94. 9–12 pages, 25 copies, $7.81; 50 copies, $7.81; 100 copies, $9.06. Covers: first 50, $3.44; additionals at .025 cents each. Plates, printed on one side: first 50, $2.50; additional at 0.188 cents each. Transportation charges will be extra. THE LANCASTER PRESS, INC., Lancaster, Pa.

ENTOMOLOGICAL NEWS

VOL. LXV JUNE, 1954 No. 6

Notes on Odonata of Surinam
VI. The Nymph of Neoneura joana Will.

By D. C. GEIJSKES, P. O. B. 306, Paramaribo

Of the genus *Neoneura* the nymph of only one species (*N. carnatica* Selys) is described by Needham [1] from Cuba. I add here the description of a second species of which exuviae were found recently on rocks in the Maroni-River in Surinam. The identification of the species was secured from a female hatching from one of the cast skins.

Neoneura joana has originally been described from British Guyana.[2] Although the species is not yet recorded from Surinam, it is a very common damsel fly along the rivers in this country. Their nymphs breed on the rocks in the rapids of the rivers.

DESCRIPTION OF THE NYMPH

Head broad and flat, quadrangular, hind angles behind the eyes prominent and spinulose. Eyes large, not bulging. Antennae long and slender, equally brown, paler at the articulations, seven jointed, relative length of the segments 4:5:9:7:4:3:2, segments 3–7 with an apical fringe of hairs.

Mentum broad triangular, reaching backward to between the coxae of the front legs. Only one pair of mental setae present. Sides of mentum in the apical half armed with a row of about 14 short and strong spines. Median lobe prominent and rounded,

[1] NEEDHAM, J. G. 1939. Nymph of the Protoneurine genus Neoneura (Odonata). Ent. News 50: 241–245.

[2] WILLIAMSON, E. B. 1917. The genus Neoneura. Trans. Amer. Ent. Soc. 43: 215–218.

finely denticulated. Lateral lobes with four (females) or five (males) setae; movable hook large and curved inward at the end, end hook well developed, separated by a deep cleft from the terminal border, which consists of a straight cut off tooth.

Maxillae on top of lacinia with six large teeth, the third the largest, followed at the lower side by a row of 5–7 smaller ones and at the upper side by two long spines; more below a secondary row of 8–11 smaller plumose setae each side. Galea on top beset with many long plumose setae.

Mandibles with four (right side) or five (left side) stout teeth unequal in size. Right mandible on inner side with one blunt tooth, left mandible with two such teeth.

Prothorax with prominent lateral lobes, the hind margin somewhat excavated. Synthorax not as broad as head, marked with three darker longitudinal bands over the sides; the empty wing pads of the exuviae reaching to the seventh abdominal segment (in the full grown nymph they may reach to the fifth segment).

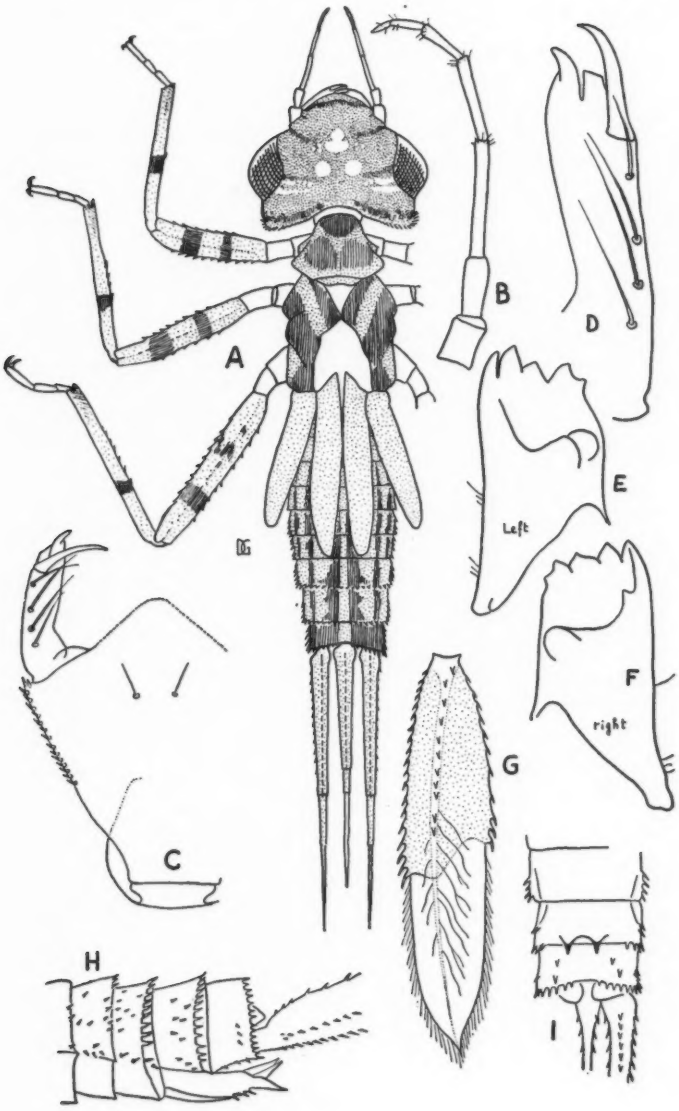
Legs rather long, the femora flattened to some extent, marked with two cross bands in the middle part, tibiae with one cross band in the basal half. Margins of femora and inner side of tibiae with a row of short spines. Apical inner side of tibiae armed with many short plumose setae, the joints of the tarsi along the under side with two rows of such setae.

Abdomen tapering to the end, the first five segments without setae, the last five segments spinulose especially along the lateral and apical margins. Mid-dorsal line of segm. 9 and 10 without spines. Segments 4–9 marked with three to two darker longitudinal lateral bands, segm. 10 with the exception of the mid-dorsal stripe dark.

Gonapophyses of female reaching behind end margins of segm. 10; inner and outer pair of the same length, outer pair on the

EXPLANATION OF FIGURES

Nymph of *Neoneura joana* Will. (female exuviae)
A. Dorsal view. B. Right antenna. C. Mentum, inner side. D. Right mental lobe, inner side. E. Left mandible. F. Right mandible. G. Right lateral gill. H. End of female abdomen from left side. I. End of male abdomen from below.


A
B
C
D
E
Left
F
right
G
H
I

ventral margin with three dents, terminal spine large sharp-pointed. Gonapophyses of male with the two sharp points reaching just over the hind margin of segm. 9. Gills long lanceolate, tips acute, the sclerotized basal part reaching to the middle at the dorsal margin or farther along the ventral margin; the margins and mid-rib armed with a row of short spines, 11 along the dorsal side, 19 along the ventral side and 10–11 along the mid-rib. Apical half of gills with simple and some branched gill-veins, the margins finely fringed with long soft hairs.

Total length (exuviae) 12–15 mm., gills 4–5 mm. (Examined 2 ♂, 8 ♀ exuviae.)

Of this species only the cast skins were found attached to rocks and larger stones in the rapids of Lamaké and in the Apoma falls in the Maroni River between Surinam and French Guyana (October 1953). Imagines of this species were common at that moment on the same places.

This nymph differs from that of *N. carnatica* by the number of setae at the lateral mental lobe (4–5 in *N. joana*, 3 in *N. carn.*), by the less hairy legs, the longer and more spiny gills and the spinulose abd. segm. 6–10.

The two species have in common: the large truncate head, one pair of mental setae, the row of marginal spines in the apical half of mentum, and the pointed abd. gills divided in a thick carinate basal part and a thin leaf-like apical portion.

It may be noted that the nymph of *Neoneura joana* has much in common with the nymph of *Aeolagrion demerarum* Will. described and figured by myself in Ann. Ent. Soc. Amer. 1941, 34: 722–24, fig. 2.

Notes on the Biologies of three Species of Bombyliidae, with a Description of one New Species

By J. C. Hall, Citrus Experiment Station,
Riverside, California

These records on biology, while not conclusive, are published in order that more interest might be created toward studying the habits of this fascinating group of flies. Comparatively little is known about the habits of the family, and much work remains to be done in this respect.

The author wishes to express his thanks to the two men, who, through their efforts, have made this paper possible: Mr. H. B. Leech of the California Academy of Sciences and Mr. R. C. Bechtel of the University of California at Davis.

In December of 1952, Mr. Bechtel collected a total of 70 nests of the mud-dauber wasp, *Sceliphron caementarium* (Drury), from various areas around Davis, California. From three of these nests emerged three specimens of *Toxophora virgata* O.S. Of the three nests, one was from the inside wall of a small pump-house and the other two were collected from the underside of a cement bridge. The nests were kept in the laboratory until the spring of 1953. Following is a list of the hymenopterans which emerged from the three nests. From nest number 20, four *Ancistrocerus tuberculocephalus sutterianus* (Saussure), and one *Stenodynerus minimoferus* Bohart; from nest number 24, three *Rygchium foraminatum blandinum* (Rohwer); and from nest number 25, three *Stenodynerus minimoferus.*

Nothing definite can be said about the specific host of *Toxophora virgata* as all three species of hymenopterans, mentioned above, fall within the category of the hosts recorded in the literature. It is unlikely, but not an impossibility, that the fly larvae fed on the *Sceliphron* larvae.

The genus *Toxophora* is found in both Europe and North America, and most of the host records are found from the former continent. Rearing and host records are not numerous

and are scattered, but from the information available, a good indication of the hosts of these flies may be obtained. Séguy (1926) [1] records the genus *Toxophora* as "Parasites des Guêpes solitaires (*Eumenes, Pelopaeus, Odynerus*)." Osten Sacken (1877) [2] records a species of *Toxophora* reared from the nest of *Eumenes fraterna* Say, "feeding either upon the caterpillar stored up in the nest, or upon the young larvae themselves." Austen (1937) [3] records *Eumenes pomiformis* Fabr. being attacked by the larvae of *Toxophora maculata* Rossi.

In 1951 Mr. Leech collected a quantity of *Ceanothus thrysiflorus* Esch. wood, which was heavily infested with the anobiid beetle, *Ptinus acuminatus* Casey. The wood was placed in a jar and kept there in an attempt to rear some of the beetles. A few months later three bombyliids emerged from the wood, along with several anobiids. The flies proved to be an undescribed species of the genus *Eclimus*.

The cast pupal skins were left protruding, for most of their length, from old anobiid burrows. It was immediately assumed that the beetles served as the hosts. But, at a later date, the spring of 1952, Mr. Leech again collected some wood, this time dead chaparral pea, *Pickeringia montana* Nutt., which was heavily infested with another anobiid, *Vriletta decorata* Van D. From this wood one specimen of *Anthrax oedipus* Fabr. emerged. In this case, by careful tracing it was found that the fly came from a small hymenopterous cocoon in an old anobiid burrow, which had been provisioned with spiders. This later case then makes the previous assumption, that the *Eclimus* species came from the anobiids, open to suspicion as to the host.

The author has been unable to locate any records in the literature on the host, or hosts, of the genus *Eclimus*. He has observed *E. luctifer* O.S. ovipositing in an old log lying near a small stream. All attempts to recover either eggs or larvae failed, and no more information is available at this time.

It was impossible to determine the hymenopteran that served as the host for *Anthrax oedipus*. Species of the genus *Anthrax*

[1] Séguy, E. Faune de France, Paris 13: 220.
[2] Osten-Sacken. Bull. U. S. Geol. Geog. Survey of Terr. 3: 265–66.
[3] Austen, E. E. Brit. Mus. Nat. Hist. Publ., London, p. 77.

have been recorded several times as being parasitic on the larvae of solitary bees and fossorial wasps. Osten Sacken (1877) states that he has observed *A. oedipus* in the Sierra Nevada Mountains, persistently flying around a hole in a pine log, probably containing the nest of some hymenopteran. He also records other species in the genus as being reared from *Pelopoeus, Cemonus, Chalicodoma,* and probably *Megachile.* Brooks (1952) [4] records and describes the pupal case of *A. irrorata* Say, a species closely related to *A. oedipus,* as being reared from *Megachile nivalis* Fries.

The following is a description of the adult and cast pupal skin of the *Eclimus* species, reared from ceanothus wood. The author takes pleasure in naming this fly after Mr. H. B. Leech.

Eclimus leechi n. sp.

Body black; wings hyaline, subcostal, costal, marginal, and first basal cells with faint infuscations, faint spots on *r–m* crossvein, base of second submarginal cell and at the bases of all the posterior cells.

Female. Front gray pollinose, blackish in center from vertex to a little beyond middle, black pilose in middle, a few whitish scales present; face gray pollinose, white pilose along oral margin; clypeus when rubbed, shining; antennae black, segment one three times longer than second, shorter than third, third segment broadest before middle, tapering to blunt apex, style wanting, segments one and two with black hair above, white below; proboscis longer than head height; palpi half as long as proboscis, first segment twice as long as the second, slender, segment two broad, tapering to a point, with short black hair; occiput gray pollinose on sides, black on upper one-fourth, white pilose, a few black hairs on vertex, golden-yellow tomentum on vertex, a few golden-yellow scales along hind margins of eyes. Thorax black, white pilose, dense golden-yellow tomentum overall, three, long, black bristles at root of wings; scutellum black, thickly covered with golden-yellow tomentum, long white hair on posterior margin; pleura gray pollinose, white pilose, tomentum want-

[4] Brooks, A. R. Canadian Ent. 84: 370.

ing; legs black, tibiae somewhat brownish; coxae white pilose, fore and middle femora entirely white pilose, hind femora white pilose on basal half, grading to iridescent black on apical half, with two short, slender bristles on under surface; halteres with stems whitish, knobs black; wings hyaline, following cells faintly infuscated: subcostal, costal, marginal, first basal, area near stigma darker, faint spots on *r–m* cross-vein, base of second submarginal cell and at bases of second, third, and fourth posterior cells. Abdomen black, first segment white pilose, rest of dorsum with short, black pile, sides of segments one to four white pilose, five to seven black pilose, entire dorsum golden-yellow tomentose, thicker on median line and posterior margins of each segment; venter white pilose and tomentose, segments six and seven with black pile. Genitalia orangish, with a few golden-yellow hairs.

Male unknown.

Type female. Mill Valley, Marin County, CALIFORNIA, VI–25–51 (H. B. Leech). Deposited in California Academy of Sciences. Paratypes. 2 females, same data as type. One specimen in the California Academy of Sciences, the other in the author's collection.

The following is a description of the cast pupal skin of *Eclimus leechi.*

Light yellow, with yellow setae and reddish-brown tubercles.

Head. Round in front view. Cephalic tubercles widely spaced, long, and straight, somewhat ridged near base; a small tubercle arises behind and a little inward of each large cephalic tubercle; frontal tubercle trifid, dorsal tubercle the largest, slightly proclinate, two ventral tubercles small, without long tapering point characteristic of other tubercles, ridged near base; middle of front with lateral depressions; a single pair of setae located behind each cephalic tubercle, about one-half as long as the tubercles; mouth parts short, not extending length of femora; labrum with a pair of small tubercles, a very small seta alongside each tubercle. Dorsum of thorax bare, a thin seta dorso-laterally above root of wings; wings extending to the third abdominal segment, without setae or tubercles. Segment one of abdomen

with a median-dorsal row of small spines, short setae interspersed between each spine, lateral area bare, three short setae at union of dorsum and venter; segments two to six with a median-dorsal row of larger spines, slightly curved upward, a variable number of short setae interspersed between each spine, a pair of setae at each end of each row of spines, three setae at union of dorsum and venter; seventh segment with a row of short spines, and interspersed setae on posterior margin; eighth segment bare, with a pair of slightly curved terminal tubercles; entire venter of abdomen bare.

The pupal skins are attached to the type and paratype specimens.

A Moisture Gradient Method for Rearing Diptera from Moist Humus

By W. A. McDonald, University of California, Los Angeles

A convenient rearing method has been used with great success by workers at U.C.L.A. to obtain new or little-collected Diptera, especially Nematocera, from moist humus, and to associate the larval and pupal stages with the adult. The procedure involves collecting damp humus or leaf mold in the field and transferring a portion or it to a can set in a pan of water and covered by a rearing cage. Thus moisture gradient is established which will permit immature forms present in the humus to develop and emerge into the cage for a considerable period following their collection.

At U.C.L.A. we use discarded syrup cans 9½″ wide by 12½″ high which contain about one cubic foot of loosely-packed humus over a two-inch layer of salt-free sand. The can, with several small holes punched through its bottom, is set into a pan in which a two-inch water level is maintained. Over the humus can is placed one of our mosquito-rearing cages, measuring 15″ by 15″ by 36″ and made of 32-mesh plastic screen stretched on a frame of ¾″ fir, with ⅛″ masonite top ond bottom, a window of cellulose acetate film and a muslin sleeve. The screen, window and sleeve

are held to the frame by thin strips of masonite and small brads. A hole is cut in the cage's bottom to admit the top of the humus can.

After the adult flies have emerged and hardened for a day or so, they can be collected with a 24″ straight glass aspirator on a rubber mouth-suction tube which is inserted into the cage through the muslin sleeve. The flies are easily sucked from the sides of the cage where they tend to congregate, especially if the cage is placed by a window. Nematocera can be blown into an alcohol vial, other Diptera into a cyanide tube. Some of the humus should also be put into a Berlese funnel to obtain the Acarida, Apterygota and larval insects present.

Our first experience with this method, using wet humus found below a perennial spring, produced a great variety of Tendipedidae and Heleidae, including a new species of *Helea* (W. W. Wirth, personal communication to J. N. Belkin), a few fungivorids, sciarids, psychodids, lauxaniids, rhagionids and all stages of *Tabanus monoensis* Hine, adults of which emerged five weeks after the date of collection.

From two to five minutes a day is sufficient time for aspirating the adults and replenishing the water level. Should space for the apparatus be lacking at the laboratory or university, it can be kept in the worker's garage or back porch and inspected by him each day on his way to or from work. When the humus finally ceases to yield specimens it can be examined for pupal skins, long-lived larvae, etc. The adults, in alcohol, are sorted to family and stored for eventual shipment to specialists.

The little time required by the method just described should appeal to entomologists involved in insect surveys as well as Diptera specialists who must often associate immature and adult stages.

Current Entomological Literature

Compiled by VENIA T. PHILLIPS, Librarian

Academy of Natural Sciences of Philadelphia

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania pertaining to entomology, including all arthropods except Crustacea. Coverage will be world-wide as regards major contributions to systematics as well as for all papers on morphology, physiology, embryology, etc. In addition, for species from the Americas and the Pacific (Nearctic, Neotropical and Polynesian regions) all minor contributions to taxonomy, distribution, etc., will also be recorded.

This list gives references of the year 1953 unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For other records of general literature and for economic literature, see the Bibliography of Agriculture, Washington, and the Review of Applied Entomology, Series A, London. For records of papers on medical entomology see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of periodicals and serials published in our January and June issues. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

GENERAL—Arthur, A. P.—A plastic cage for rearing small parasites. [43] 86: 33–35, ill., 1954. **Ascher, K. R. S. & Z. Levinson.**—Chemicals affecting the preimaginal stages of the housefly. I. A review of the literature. [123] 14: 235–59. **Ballard, R. C.**—A modification of the Huffaker cage for confining mites or small insects. [76] 46: 1099. **Bellinger, P. F.**—Salmon's fluid, a new mounting medium for slides of small larvae and larval pelts of Lepidoptera. [85] 7: 170–71. **Brown, L. R.**—A standardized laboratory apparatus for using the speedlight in photography of insects and other small objects. [85] 7: 148–66, ill. **Colas, G.**—Insectes—Quatre-vingts agrandissements précédés d'une introduction et d'une table descriptive. Paris, Libr. des Arts Decoratifs, 1952. 6 p., 46 pls. (Review by J. L. Gressitt [52] 46: 578.) **Dales, R. P.**—A simple trap for tipulids. [60] ser. 4, v. 89: 304. **Eyndhoven, G. L. van.**—Symposion "Insecten en viren," Verslag van de 24e vergadering der afdeling voor toegepaste entomologie. (English summaries.) [57] 15: 33–64, 1954. **Gressitt, J. L.**—"Splendeur et diversité du monde des insectes." [52] 46: 464. **Hanson, J. F.**—A simple technique for improving and accelerating KOH clearing of insects. [36] 49: 21, 1954. **Hayward, K. J.**—An entomologist in Argentina. IV. Journey to Misiones. [Ent. Record] 66: 12–16, 1954. **Heineman, B.**—Musing in European museums. [85] 7: 167–70, ill. **Kellen, W. R.**—Laboratory experiments on the role of insects in sewage oxidation ponds. [76] 46: 1041–48.

Leston, D.—Entomological labels: a warning concerning "Ball-pen" ink. [60] ser. 4, v. 89: 291. **Linssen, E. F.**—Entomological photography in practice. London, Fountain Press, 112 p., ill. 32.6 s. (Reviewed in [28] 3: 692–93.) **Linssen, E. F. & L. H. Newman.**—The observer's book of common British insects and spiders, London, F. Warne & co., ltd. 128 p., ill. 5 shillings. (Reviewed in [28] 3: 684–85.) **Mariani, M.**—Compendio di entomologia medica. Edizione Agap, Palermo, 1952, 202 p., ill. 2,000 lire. (Review in [28] 3: 683–84.) **Marié, P.**—Migrations suicides de certains insectes. [59] 9: 71–75. **Munroe, E. G. & P. B. Beirne.**—Central file of figures of insect types. [Science] 119: 3A, 1954. **Osburn, W. S.**—Techniques of population analysis of alpine orthoptera. [J. Colo.-Wyo. Acad. Sci.] 4: 61–62. **Pearcy, W. G.**—Some limnological features of Clear Lake, Iowa. [73] 28: 189–207. (Insects, p. 198–201.) **Pickens, A. L.**—Intraspecific problems in the taxonomy of insect caste. [Insectes Sociaux, Paris] 1: 71–74, 1954. **Prasad, S. K.**—A convenient device for sampling mustard aphids population. [Indian J. Ent.] 15: 270–71. **Rautenberg, L. E.**—Beiträge zur kenntnis alter naturwissenschaftlicher werke. Beitrag 2 (Andreas Friedrich Happe: Abbildungen des schmetterlinge, 1783–85). [28] 3: 618–26, ill. **Rawlins, W. A.**—A method for rearing the onion maggot in insectary cultures. [76] 46: 1101. **Rockstein, M.**—A portable refrigerating device for the collection and rapid inactivation of small biological specimens. [52] 46: 544–46, ill. **Roonwal, M. L. and others.**—A systematic catalogue of the main identified entomological collection at the Forest Research Institute, Dehra Dun. [Indian Forest Leaflet] 121: 39–187 (S). **Shaw, F. R. & G. Clark.**—Notes on certain ectoparasites in Massachusetts. [76] 46: 1093–94. **Snyder, T. E.**—Bibliography of termites (Announcement of the author's forthcoming book). [Pest Control] 22: 22, 1954. **Strickland, E. H.**—Polythene-stoppered vials for storing insects in alcohol. [43] 85: 470–71, ill.

BIOGRAPHIES, OBITUARIES—Carpenter, Geoffrey Douglas Hale, 1883–1953.—Obituary notice. [28] 3: 694. **Draudt, Max,** 1875–1953.—Obituary. [28] 3: 694–95. **Fischer, Johann Gotthelf,** 1771–1853.—Zum 100. todestag des naturforschers Johann Gotthelf von Waldheim, von Johannes W. E. Büttner. [28] 3: 616–18. **LeMarchand, S.,** 1876–1953.—Obituary notice. [85] 7: 166. **Plummer, Charles Carlton,** 1907–1952.—Obituary, with port. by A. C.

Baker. [76] 46: 1126–27. **Rapp, Otto,** 1878– .—Otto Rapp zum 75. geburtstag, (Bibl. & port.) by W. Liebmann. [Ent. Blätter] 49: 129–32. **Strecker, Ferdinand Heinrich Herman,** 1836–1901.—An interview with Herman Strecker in 1887, by H. B. Weiss. [101] 61: 201–210. **Swain, Ralph Brownlee,** 1912–1953.—Bio-bibliography by G. G. Becker. [101] 61: 185–88. **Thurman, Deed Cleveland, Jr.,** 1921–1953.—Obituary by H. L. Trembly. [76] 46: 1126. **Watari, Masami,** 1897–1953.—Obituary notice. [85] 7: 166. **Yuasa, Hiraharu,** 1900–1953.—Obituary, with port. by R. Roberts. [76] 46: 1127–28.

ANATOMY, PHYSIOLOGY, MEDICAL—Allegret, P. —Influence de la rétention expérimentale de la soie sur la métamorphose de Galleria mellonella (L.). [2] 238: 623–25, 1954. **Allen, W. R. & A. G. Richards.**—Oxygen uptake of muscle homogenates from three species of insects, in the presence of added succinate, cytochrome c, and phosphate. [44] 32: 1–8, 1954. **Arvy, L. & M. Gabe.**—Données histophysiologiques sur la neuro-sécrétion chez les insectes paléoptères (Éphéméroptères et Odonates). [Pubbl. Staz. Zool. Naopli] 24, suppl.: 54–55, 1954. (Abstract.) —Données histophysiologiques sur les glandes endocrines céphaliques de Brachyptera risi Morton. (Plecoptera.) [24] 90: 105–22, ill. **Babers, F. H. & J. J. Pratt.**—Resistance of insects to insecticides: the metabolism of injected DDT. [76] 46: 977–82. **& C. C. Roan.**—The dehydrochlorination of DDT by resistant cockroaches. [76] 46: 1105. **Baldwin, W. F. & H. L. House.**—Studies on effects of thermal conditioning in two species of sawfly larvae. [44] 32: 9–15, 1954. **Berim, N. G. & I. M. Edel'man.**—O fiziologicheskoi ustoichivosti nasekomykh k DDT i GKHTSG i putiakh ee preodoleniia. [Ent. Obozrenie] 32: 15–26, 1952. **Boistel, J.**—Etude fonctionnelle des terminaisons sensorielles des antennes d'hyménoptères. [Compt. rendus, Soc. Biol., Paris] 147: 1683–68, ill. **Bounhiol, J. J., M. Gabe & L. Arvy.** —Données histophysiologiques sur la neuro-sécrétion chez Bombyx mori L. et sur ses rapports avec les glandes endocrines. [Pubbl. Stz. Zool., Napoli] 24, suppl.: 52–53, 1954. **David, J.**—Étude expérimentale des variations de l'aile vestigiale de Drosophila melanogaster Meigen. [39] 87: 431–60, ill. **Day, M. F., I. F. B. Common, J. L. Farrant & C. Potter.**—A polyhedral virus disease of a pasture caterpillar, Pterolocera amplicornis Walker (Anthelidae). [Austr. J. Biol. Sci.] 6: 574–79, ill. **& M. J. Bennetts.**—Healing of gut wounds in the mosquito Aedes argypti (L.) and the

leafhopper Orosius argentatus (Ev.). [Austr. J. Biol. Sci.] 6: 580–85, ill. **De Lerma, B.**—Osservazioni sulla neurosecrezione in Hydrous piceus L. (Coleotteri). [Pubbl. Staz. Zool. Napoli] 24, suppl.: 56–57, 1954. (Abstract.) **Dupont-Raabe, M.**—Réparition des activités chromatiques dans le ganglion susaesophagien des phasmides: mise en évidence d'une région sécrétoire dans la partie deuto et tritocérébrale. [2] 238: 950–51, 1954. —Le rôle endocrine du cerveau dans la régulation des phénomènes d'adaptation chromatique et de la ponte chez les phasmides. [Pubbl. Staz. Zool. Napoli] 24, suppl.: 63–66, 1954. **Fisk, F. W. & J. A. Isert.**—Comparative toxicities of certain organic insecticides to resistant and non-resistant strains of the German cockroach, Blatella germanica (L.). [76] 46: 1059–62, ill. **Fraenkel, G. & Peh-I Chang.**—Manifestations of a vitamin B (Carnitine) deficiency in the larvae of the meal worm, Tenebrio molitor L. [113] 27: 40–56, ill., 1954. **French, E. W.**—Carnitine (Vitamin B_t) as a nutritional requirement for the confused flour beetle. [98] 173: 173, 1954. **Gaumont, R.**—Les modalités de la piqûre chez les larves primaires de quelques Chermesidae pendant la diapause. [2] 238: 730–32, 1954. **Gilmour, D.**—Localization of the magnesium-activated apyrase of insect muscle in the sarcosomes. [Austr. J. Biol. Sci.] 6: 586–90. **Grandori, L. & E. Carè.**—Studio anatomoistologico sul sistema neurosecretore in Musca domestica e Calliphora erythrocephala. [Pubbl. Staz. Zool. Napoli] 24, suppl.: 50–51, 1954. **Gray, H. E. & G. Fraenkel.**—The carbohydrate components of honeydew. [113] 27: 56–65, 1954. **Haskins, C. P. & R. M. Whelden.**—Note on the exchange of ingluvial food in the genus Myrmecia. (Formicidae.) [Insectes Sociaux, Paris] 1: 33–37, 1954. **Haydak, M. H.**—Influence of the protein level of the diet on the longevity of cockroaches. [52] 46: 547–60. **Ichikawa, H., K. Yashika & J. Nishiitsutsuji.**—Studies on the insect metamorphosis. III. Activity of the brain in the post-embryonic development of lepidopterans. [Mem. Coll. Sci., Univ. Kyoto, Ser. B] 20: 145–50. **Ivanov, T. S.**—Anatomiia perifericheskoi nervnoi sistemy briushnykh segmentov Aziatskoi saranchi (Locusta migratoria L.). [Ent. Obozrenie] 32: 148–59, ill., 1952. **Ivanova-Kazac, O. M.**—Embrional'noe razvitie naezdnika Mestocharis militaris R.-Kos. (Chalcididae.) [Ent. Obozrenie] 32: 160–66, ill., 1952. **Kaji, S.**—Transplantation of thoracic legs of the Eri-silkworm, Philosamia cynthia ricini. [Annot. Zool. Jap.] 26: 224–27. **Kozhanchikov, I. V.**—K

voprosu o zhiznennom termicheskom optimume. IX. Amplituda temperatury kak faktor v razvitii neparnogo i dubovogo shelkopriadov. [Ent. Obozrenie] 32: 27–42, 1952. **Krackiewicz, Z.**—Studia nad chromosomami Lasioptera rubi Heeg. (Cecidomyidae.) [Sprawozdania Towarzystwo Nauk. Warszawskie, Wyd. IV, Biol.] 43: 58–60, 1950/51. (1953.) **Lavie, P.**—L'enregistrement thermique continu dans les populations d' "Apis mellifica" au cours de l'hivernage. [Insectes Sociaux, Paris] 1: 39–48, ill., 1954. **Momma, E.**—Anomalous divisions of the grasshopper germcells induced by the treatment with α- or β-Peltatin. (Studies on abnormal nuclear divisions, 8.) [J. Fac. Sci., Univ. Hokkaido, Ser. VI] 11: 502–08, ill. **Narayanan, E. S.** —Physiology of pupation in fruit-flies. [Sci. Repts. Indian Agr. Res. Inst. 1951] p. 79–80. —Studies on factors governing development of winged aphids, Rhopalosiphum pseudobrassicae (Davis). [Sci. Reports Indian Agr. Res. Inst. 1951] p. 78–79. **Oertel, E., R. B. Emerson & H. F. Wheeler.** —Transfer of radioactivity from worker to drone honey bees after ingestion of radioactive sucrose. [52] 46: 596–98. **Pain, J.**—La "Substance de fécondité" dans le développement des ovaires des ouvrières d'abeilles (Apis mellifica L.). Critique des travaux de Müssbichler. [Insectes Sociaux, Paris] 1: 59–70, 1954. **Pielou, D. P. & R. F. Glasser.**— Thermal tolerance in Macrocentrus ancylivorus Roh. (Braconidae). [44] 32: 30–38, 1954. **Possompes, B.**—Données expérimentales sur l'activation de l'anneau de Weismann par le cerveau chez Calliphora erythrocephala Meig. [Pubbl. Staz. Zool. Napoli] 24, suppl.: 59–62, 1954. **Ray, D. T. & P. W. Whiting.**—An X-ray dose-action curve for eye-color mutations in Mormoniella. [30] 106: 100–06, 1954. **Rockstein, M. & A. S. Kamal.**—Distribution of digestive enzymes in the alimentary canal of larvae of flies of medical and veterinary importance. [113] 27: 65–70, 1954. **Sigot, A.**—Contribution a l'étude de la sensibilité de la sensibilité héréditaire au gaz carbonique chez la drosophile. [39] 87: 335–413. **Slipka, J.**—Le systèhne tracheal des larves de diptères-nematocera du point de vue de l'evolution. [45] 49: 6–14, 1952. **Thomsen, E.**—Experimental evidence for the transport of secretory material in the axons of the neurosecretory cells of Calliphora erythrocephala Meig. [Pubbl. Staz. Zool. Napoli] 24, suppl.: 48–49, 1954. —Observations on the cytology of neurosecretion in various insects (Diptera and Hymenoptera). [Pubbl. Staz. Zool. Napoli] 24, suppl.: 46–47, 1954. (Abstract.)

Tuzet, O. & J.-F. Manier.—La spermatogenèse d'Himantarium gabrielis Meinert. (Chilopoda.) [18] ser. 11, v. 15: 231–39, ill. —Les spermatozoïdes de quelques myriapodes chilopodes et leur transformation dans le réceptacle séminal de la femelle. [18] 11th ser., 15: 221–30, ill. **Wheldon, R. M. & C. P. Haskins.**—Cytological and histological studies in the Formicidae. I. Chromosome morphology and the problem of sex determination. [52] 46: 579–95, ill. **Wigglesworth, V. B.**—Neurosecretion and the corpus cardiacum of insects. [Pubbl. Stazione Zool. Napoli] 24 Suppl.: 41–45, 1954. —Surface forces in the tracheal system of insects. [116] 94: 507–22, ill. **Wilkinson, P. R.** —Observations on the sensory physiology and behaviour of larvae of the cattle tick, Boophilus microplus (Can.). [Austr. J. Zool.] 1: 345–56, ill. **Yanagishima, S.** and others. —Experimental study on the phenomenon of so-called "Preadaptation" in Drosophila melanogaster. [Mem. Coll. Sci., Univ. Kyoto, Ser. B] 20: 163–70. **Yushima, T. & H. Chino.** —On the occurrence of an acetylcholine-like substance in some insect eggs. (1) On the muscle-stimulation substance in eggs of the rice stem borer, Chilo simplex, and cabbage armyworm, Barathra brassicae. [Annot. Zool. Jap.] 26: 228–32, ill. —(2) The change in acetylcholine-like substance content during embryonic development in some insect eggs. (Ibid.) p. 233–37.

ARACHNIDA AND MYRIOPODA—Allred, D. M. & D. E. Beck.—A new species of Acomatacarus (Acarina, Trombiculidae) from Utah. [66] 13: 87–90, ill. **Baker, E. W. & A. E. Pritchard.**—A key to mites of the genus Pentamerismus, with descriptions of three new species (Acarina: Phytoptipalpidae). [153] 11: 353–66, ill. **Beier, M.**— Pseudoscorpione aus El Salvador und Guatemala. [Senckenbergiana] 34: 15–28, ill. (*). **Boudreaux, H. B.**—A simple method of collecting spider mites. [76] 46: 1102–03. **Carvalho, J. C. M.**—Araneida. (See Hemiptera.) **Cook, D. R.**—Preliminary list of the Arrenuri of Michigan. Part 1. The subgenus Arrenurus. [11] 73: 39–58, ill., 1954 (*k). **Edmunds, L. R.**—An additional record of the lone-star tick, Amblyomma americanum (Linn.) in Ohio. [106] 54: 98, 1954. **Furman, D. P.**—A revision of the genus Pneumonyssus (Acarina: Halarachnidae). [80] 40: 31–42, ill., 1954. **Goodwin, M. H., Jr.**—Observations on the biology of the lizard mite Geckobiella taxana (Banks) 1904 (Acarina: Pterygosomidae). [80] 40: 54–59, ill., 1954. **Kaestner, A.**—Die mundwerkzeuge der spinnen, ihr bau,

ihre funktion und ihre bedeutung für das system. Pt. 3, Die cheliceren der labidognatha (Dipneumones). [Mitt. Zool. Mus. Berlin] 29: 3–54, ill. **Kaston, B. J.**—Is the black widow spider invading New England? [Science] 119: 192–93, 1954. **Lane, J. E.**—A redescription of the American lizard mite, Geckobiella texana (Banks), 1904, with notes on systematics of the species. (Acarina: Pterygosomidae.) [80] 40: 93–99, ill., 1954. **Levi, H. W.**—New and rare Dipoena from Mexico and Central America (Araneae, Theridiidae). [13] no. 1639, 11 p., ill. —Spiders of the genus Dipoena from America north of Mexico (Araneae, Theridiidae). [13] no. 1647, 38 p., ill. (*). **Mulaik, S. & D. M. Allred.**—New species and distribution records of the genus Caeculus in North America. (Acarina, Caeculidae.) [56] 56: 27–40, ill., 1954. **Roewer, C. F.**—Neotropische Gagrellinae (Opiliones, Arachnidae). [Mitteil. Zool. Mus. Berlin] 29: 180–265, ill. (*k). **Tuzet & Manier.**—(See Anatomy.) **Walter, C. & C. Bader.**—Mission scientifique de l'Omo. Hydracarina. [Mém. Muséum Nat. Hist. Nat. Paris, Ser. A] 4: 87–236, ill., 1952. **Wilkinson, P. R.**—Boophilus. (See Anatomy.)

SMALLER ORDERS—Ando, H.—Studies on the pleuropodia of Odonata. [Sci. Repts. Tokyo Bunrika Daigaku, Sect. B] 7: 167–81, ill. **Arvy, L. & M. Gabe.**—The intercerebralis-cardiacumallatum system of some Plecoptera. [30] 106: 1–14, ill., 1954. **Barlet, J.**—Morphologie du thorax de Lepisma saccharina L. (Apterygote thysanoure). II. Musculature. [136] 89: 214–36, ill. **Berner, L.**—Phoretic association between a species of Simulium and a mayfly nymph, with a description of the nymph. [19] ser. 12, v. 7: 116–21, ill., 1954. **Broadhead, E.**—A new parthenogenetic psocid from stored products, with observations on parthenogenesis in other psocids. (Corrodentia.) [60] 90: 10–16, 1954. **Chao, H.-F.**—The external morphology of the dragonfly Onychogomphus ardens Needham. [131] 122: no. 6, ill. (Review by F. C. Fraser in [60] ser. 4, v. 89: xlvii–viii.) **Dias dos Santos, N.**—Fauna do Distrito Federal. I. Descrição do alótipo macho de Erythrodiplax chromoptera Borror, 1942 (Odonata-Libellulidae). [48] 4: 247–50, ill. **Eads, R. B.**—An addition to the Texas flea fauna. [80] 40: 102, 1954. **Edmunds, G. F., Jr.**—New species of Utah mayflies. II. Baetidae, Centroptilum. [56] 56: 1–4, ill., 1954. **Emerson, K. C.**—A review of the genus Menopon Nitzsch, 1818 (Mallophaga). [19] ser. 12, v. 7: 225–32, ill., 1954 (S). **Freeman, P.**—Ephemerida. (See Diptera.) **Hase, A.**—

Über menschenläuse (Anoplura). Bibliographien, geschichte der forschungen, eier und mikropylapparat. [Zeit. f. Parasitenkunde] 16: 145–190, ill., 1954. **Machado Filho, J. P.**—Contribuição ao conhecimento do gênero Parasparatta Burr, 1911, com descrição de uma espécie nova (Dermaptera-Labiidae). [48] 4: 243–46, ill. **Margabandhu, V. & T. N. Ananthakrishnan.**—Annotated list of Indian Thysanoptera (Suppl.). [Indian J. Ent.] 15: 183–90. **Moretti, G.**—Bilancio ecologico di una raccolta di tricotteri delle Marche, Umbria ed Abruzzo. [Boll. di Zool., Torino] 19: 245–69, 1952. **Scott, D. B.**—The economic biology of Collembola. [76] 46: 1048–51. **Smit, F. G. A. M.**—Results of the Archbold expeditions. No. 70, Siphonaptera from Netherlands New Guinea. Part 1. [13] no. 1638, 53 p., ill. (*). **Snyder, T. E.**—Termitidae. (See General.) **Tjønneland, A.**—A contribution to the zoogeography of Norwegian dragonflies. [Univ. Bergen, Årbok 1952, Natur. rekke] 15, 44 p., maps. **Tuzet, O. & J.-F. Manier.**—Syncystis aeschnae n. sp., néogrégarine (= Schizogrégarine Léger 1900) parasite des larves d'Aeschna. [18] ser. 11, v. 15: 241–46, ill.

ORTHOPTERA—Amand & Cloyd.—(See Diptera.) **Brookes, H. M.**—The morphological development of the embryo of Gryllus commodus Walker. [Trans. Roy. Soc. S. Austr.] 75: 150–59, ill., 1952. **Dupont-Raabe, M.**—(See Anatomy.) **Fisk & Isert.**—(See Anatomy.) **Ivanov, T. S.**—(See Anatomy.) **Joly, P. & L.**—Résultats de greffes de Corpora allata chez Locusta migratoria L. [18] ser. 11, v. 15: 331–45, ill. **Lawson, F. A.**—Structural features of cockroach egg capsules IV. The oötheca of Parcoblatta uhleriana. [82] 27: 14–20, ill., 1954. **Makhotin, A. A.**—Vzaimootnoshenie osnovykh grupp prygaiushchikh priamokrylykh i morfologiia ikh iaitseklada. [Ent. Obozrenie] 32: 126–36, ill., 1952. **Momma, E.**—(See Anatomy.) **Osburn, W. S.**—(See General.) **Piquett, P. G. & J. H. Fales.**—Life history of Blaberus giganteus (L.). [76] 46: 1089–90, ill. **Princis, K.**—Kleine beiträge zur kenntnis der blattarien und ihre verbreitung. VI. [Ent. Tids.] 74: 203–13, 1954 (S). **Slifer, E. H.**—The permeability of the sensory pegs on the antennae of the grasshopper (Acrididae). [30] 106: 122–28, ill., 1954. **Tuzet, O. & J. Rambier.**—Recherches sur les grégarines des orthoptéroides. [18] ser. 11, v. 15: 247–50, ill. **Voy, A.**—Sur l'existence de deux catégories d'oeufs dans la ponte globule du phasme (Clonopsis gallica Charp.). [2] 238: 625–27, 1954.

HEMIPTERA—Balachowsky, A. S.—Les cochenilles de France, d'Europe, du Nord de l'Afrique et du Bassin Mediterranéen. VII. Monographie des Coccoidea Diaspidinae—IV. Actùalites scientifiques et industrielles 1202, Hermann & Cie. Paris, 207 p., ill. (Rev. in [28] 3: 686.) **Bradley, G. A.**—A new species of Cinara (Aphididae) from Saskatchewan. [43] 85: 431–32, ill. **Carvalho, J. C. M.**—Neotropical Miridae, LXVII: Genus Ranzovius Distant, predaceous on eggs of Theridion (Araneida) in Trinidad. [19] ser. 12, v. 7: 92–96, ill., 1954 (*). —Neotropical Miridae LXXI: Genus Cyrtocapsus Reuter with descriptions of four new species. [36] 49: 12–17, ill., 1954. **China, W. E.**—Developmental colour change in species of Flatidae (Fulgoroidea). [19] ser. 12, v. 7: 150–52, 1954. **Dashman, T.**—The unguitractor plate as a taxonomic tool in the Hemiptera. [52] 46: 561–78, ill. **Dispons, D.**—Etude sur le genre Ischnonyctes Stal. Biologie d'Ischnonyctes barbatus (Lucas). (Emesinae.) [Rev. Franc. Ent.] 20: 231–71, ill. **Drake, C. J.**—Synonymic data and descriptions of new genera and species of Tingidae. [66] 13: 91–99. **Johnson, C. G.**—Aphid migration in relation to weather. [Biol. Reviews] 29: 87–118. **Knowlton, G. F.**—Capitophorus and Amphorophora aphid notes. [36] 49: 8–11, 1954. **Kormilev, N. A.**—Notes on neotropical Aradidae III. On some apterous Mezirinae from Brazil. [48] 4: 229–42, ill. (*). **Leston, D.**—Dorsal abdominal glands in Heterogaster urticae (F.) (Lygaeidae). [60] 90: 20, 1954. **Narayanan, E. S.**—Aphids. (See Anatomy.) **Porter, T. W.**—Brachypterous form of Hebrus consolidus Uhler (Hebridae). [82] 27: 38–39, ill., 1954. **Southwood, T. R. E.**—Interspecific copulation between Nabis ferus (L.) and N. rugosus (L.). [60] ser. 4, v. 89: 294. **Turnipseed, G. F. & C. F. Smith.**—Life history and control of scales on apples in North Carolina. [76] 46: 969–72. **Wolfe, H. R. & R. W. Anthon.**—Transmission of the western X-disease virus from sweet and sour cherry to peach by two species of leafhoppers. [76] 46: 1090–92.

LEPIDOPTERA—Allegret, P.—Variations individuelles des facteurs d'excrétion protidique avant la mue nymphale chez Galleria mellomella (L.). [2] 238: 518–20, 1954. **Bauer, D. L.**—Butterflies at water holes in Central Arizona. [85] 7: 146–47. **Bennett, W. H.**—The pupal morphology of the pine needle miner (Gelechiidae). [56] 56: 41–42, ill., 1954. **Blais, J. R.**—Effects of the destruction of the current year's foliage of balsam fir on the fecundity and

habits of flight of the spruce budworm. [43] 85: 446–48. **Brandt, H.**—Schmetterlinge, Erster teil, Insekten Deutschlands I. Heidelberg, C. Winter, 176 p., ill. DM 8.90. (Reviewed in [28] 3: 689–90.) **Burkhardt, C. C. & R. H. Painter.**—Weight differences in southwestern corn borer larvae, Diatraea grandiosella Dyar, reared on teosinte in Kansas in 1952. [82] 27: 21–23, ill., 1954. **Day, M. F. and others.**—(See Anatomy.) **Dondale, C. D.**—(See Hymenoptera.) **Evans, W. H.**—A catalogue of the American Hesperiidae, indicating the classification and nomenclature adopted in the British Museum (Nat. Hist.) Pt. 3, Pyrginae. London, Br. Mus. (Nat. Hist.), 246 p., 53 pls. **Ferguson, D. C.**—Revision of the occiduaria-argillacearia complex of the genus Itame, with descriptions of new races (Geometridae). [43] 85: 453–61, ill. **Fox, R. M.**—Speciation in the Ithomiidae. [J. Colo.-Wyo. Acad. Sci.] 4: 61. **Flanclemont, J. G.**—A new species of Copablepharon (Noctuidae). [36] 49: 25–27, ill., 1954. **Henson, W. R., R. W. Stark & W. G. Wellington.**—Effects of the weather of the coldest month on winter mortality of the lodgepole needle miner, Recurvaria sp., in Banff national park. [43] 86: 13–19, 1954. **Ichikawa and others.**—(See Anatomy.) **Judd, W. W.**—The white veined dagger, Simyra henrici Grt. (Phalaenidae), and its parasites reared from cat-tail, Typha spp. [Proc. Nova Scotia Inst. Sci.] 23: 115–19, 1954. **Keen, E. P.**—Correction of identity of the Douglas-fir cone moth. [76] 46: 1107–08. **Koch, Manfred & K. Herschel.**—Falter bei tag und nacht. Neumann-Verlag, Radebeul & Berlin, 288 p., ill., DM 12. (Reviewed in [28] 3: 689.) **Komárek, J. & V. Skuhravý.**—Der einfluss der temperatur auf die periodische massenvermehrung des schwammspinners (Lymantria dispar L.). [45] 49: 15–30, 1952. **Latham, R.**—Fagitana littera reared from larva. [85] 7: 172. **Lesse, H. de.**—Formules chromosomiques nouvelles chez les Lycaenidae (Rhopalocera). [2] 238: 514–16, ill., 1954. **McElvare, R. R.**—Schinia macroptica Smith, a synonym (Phalaenidae). [36] 49: 22–23, ill., 1954. **McGuffin, W. C.**—Descriptions of larvae of forest insects: Syngrapha, Autographa (Phalaenidae). [43] 86: 36–39, 1954 (k). **MacKay, M. R.**—The last-instar larva of Epinotia mediovirida na (Kft.) (Olethreutidae). [43] 85: 404–07, ill. **Randle, W. S.**—Observations on the life-history of Calephelis borealis. Part II. [85] 7: 133–38. **Rautenberg, L. E.**—(See General.) **Remington, C. L.**—Two new genes, "whitish" and "blonde," producing pale males and females of Colias philodice. [85]

7: 139–45. **Sevastopulo, D. G.**—The apparent influence of isolation in some species of Geometridae. [85] 7: 172. **Smith, R. C. & W. W. Franklin.**—The garden webworm—Loxostege similalis Guen. as an alfalfa pest in Kansas. [82] 27: 27–38, ill., 1954. **Stark, R. W.**—Distribution and life history of the lodgepole needle miner (Recurvaria sp.) (Gelechiidae) in Canadian Rocky Mountain parks. [43] 86: 1–12, ill., 1954. **Wyatt, A. K.**—On the larva of Lytrosis unitaria. [36] 49: 7, 1954.

DIPTERA—Aczel, M. L.—The genus Trupanea Schrank in the neotropical region. (Tephritidae.) I. The diespasmena-group. [48] 4: 273–86, ill. (*k). **Alexander, C. P.**—New species of crane-flies from South America. Part XV. [52] 46: 599–617, ill. **Amand, W. St. & W. J. Cloyd.**—Parasitism of the grasshopper, Chortophaga viridifasciata (Degeer) (Locustidae), by dipterous larvae. [80] 40: 83–87, ill., 1954. **Ascher & Levinson.**—(See General.) **Barigozzi, C.**—Controllo genotipico ed ambientale della struttura dei nuclei salivari durante lo sviluppo dei ditteri. [Boll. di Zool., Torino] 19: 397, 1952. **Berner, P.**—(See Smaller orders.) **Borg, A. F. & W. R. Horsfall.**—Eggs of floodwater mosquitoes. II. Hatching stimulus. [52] 46: 472–78. **Briseño Iragorry, L., L. Vargas & A. Díaz Nájera.**—Algunos caracteres morfologicos de Simulium amazonicum Goeldi, 1905. [Rev. Inst. Salubr. y Enferm. Trop., Mexico] 13: 243–46, ill. **Curran, C. H.**—The Asilidae and Mydaidae of the Bimini Islands, Bahamas, British West Indies. [13] no. 1644, 6 p. (*). —Notes and descriptions of some Mydaidae and Syrphidae. [13] no. 1645, 15 p. (*). **David, J.**—Drosophila. (See Anatomy.) **Day & Bennetts.**—(See Anatomy.) **Domenichini, G.**—Degeeria luctuosa (funebris) Meig. (Larvaev.) e Perilitus deceptor Wesm. (Hym., Bracon.) parassiti di Melasoma Aenes L. adulta. [Boll. Zool. Agrar. e Bachi.] 19: 139–76, ill. **Freeman, P.**—A new African species of Silumium in phoretic association with mayfly nymphs. [19] ser. 12, v. 7: 113–21, ill., 1954. **& B. de Meillon.**—Simuliidae of the Ethiopian region. London, Br. Mus. (Nat. Hist.) 224 p., 68 figs. **Freire-Maia, N. I. F. Zanardini & A. Freire-Maia.**—Chromosome variation in Drosophila immigrans. [48] 4: 303–11, ill. **Griswold, C. L.**—Transmission of the oak wilt fungus by the pomace fly. [76] 46: 1099–1100. **Hardy, G. H.**—Reduction of the median field in the wing venation of Diptera. [60] 90: 2–3, 1954. **Hull, F. M.**—The genus Mixogaster Macquart. (Syrphidae.) [13] no. 1652, 28 p., ill. (*). **Jones,**

C. M.—Biology of Tabanidae in Florida. [76] 46: 1108–09. **Kallostian, G. H.**—Tomosvaryella lepidipes—a parasite of the geminate leafhopper. (Dorilaidae.) [76] 46: 1098–99. **Lal, R. & S. B. Lal Gupta.**—Morphology of the immature stages of Sphaerophora scutellaris (Fabr.) (Syrphidae) with notes on its biology. [Indian J. Ent.] 15: 207–18, ill. **Lee & Ryckman.**—(See Coleoptera.) **MacDougall, G. W. & R. M. Fox.**—The seasonal distribution of carrion and refuse feeding flies in Colorado Springs, Colo. [Colo.-Wyo. Acad. Sci., Jour.] 4: 57. **McLintock, J. & K. R. Depner.**—A review of the life-history and habits of the horn fly, Siphona irritans (L.) (Muscidae). [43] 86: 20–33, 1954. **Magni, G. E.**—Sex-ratio in Drosophila bifasciata. [Rendiconti Ist. Lombardo, Cl. Sci. Mat. e Nat.] 85: 391–411, 1952. **Martelli, M.**—Reperti sulla Terellia fuscicornis (Loew) (Trypetidae). [Redia] 37: 405–442, ill., 1952. **Narayanan, E. S.**—Dacus. (See Anatomy.) **Puisségur, C.**—Sur quelques parasites de carabes. [59] 9: 65–68. **Saccà, G.**—Variabilità fenotipica in Musca domestica L. [Boll. di Zool., Torino] 19: 293–96, ill., 1952. **Satchell, G. H. & A. L. Tonnoir.**—The Australian Psychodidae, Part I–II. [Austr. J. Zool.] 1: 357–48, ill. (*k). **Schlinger, E. I.**—A new Chilean species of Ogcodes Latreille (Acroceridae). [153] 11: 319–21, ill. **Shewell, G. E.**—Notes on the types of some American Agromyzidae. [43] 85: 462–70, ill. **Slipka, J.**—(See Anatomy.) **Theodor, O.**—Nycteribiidae & Streblidae. [Lindner's Die fliegen der palaearktischen region] lief 174, teil 66a & 66b, 1954, ill. (*k). **Thompson, W. R.**—The tachinid parasites of Archips cerasivorama Fitch. (2) Eusisyropa blanda O. S. [43] 85: 393–404, ill. **Vargas, L.**—Culicoides wirthomyia n. sp. y Culicoides stigmalis Wirth, 1952. [Rev. Inst. Salubr. y Enferm. Trop., Mexico] 13: 227–33, ill. **& A. Díaz Nájera.**—Simulium (Notolepria) gonzalezi n. sp. [Rev. Inst. Salubr. y Enferm. Trop., Mexico] 13: 235–41, ill. **Vizzi, F. F.**—The mouthparts of the male mosquito Anopheles quadrimaculatus Say. [52] 46: 496–504, ill. **Vockeroth, J. R.**—Musca autumnalis Deg. in North America. [43] 85: 422–23. **Yoshimoto, C. M.**—Notes on the species of Drosophilidae occurring in Kansas. [82] 27: 23–26, 1954.

COLEOPTERA—Arnett, R. H., Jr.—The oedemerid beetles of the Bimini Island group, Bahama Islands, British West Indies. [13] no. 1646, p. 13, ill. **Bap Reddy, D.**—Effect of short exposures to low temperatures on the third larval instar of the rice weevil. [Ind. J. Ent.] 15: 180–82.

& A. E. Michelbacher.—Nature of food and its influence on rice weevil. [76] 46: 1098. **Becker, E. C. & M. W. Sanderson.**—Honduras Pselaphidae. Part II. [52] 46: 437–64, ill. **Costa Lima, A. da.**—Dois coccinelideos do gênero Prodilis (= Neaporia) (Coccinelidae, Ortaliini). [48] 4: 301–02, ill. (*). **Darlington, P. J., Jr.**—West Indian Carabidae. The Bahama species. [13] no. 1650, 16 p. (*). **Davies, M. J.**—Feeding behaviour of some Amara spp. (Carabidae). [60] ser. 4, v. 89: 297. **Dietrick, E. J. & R. van den Bosch.**—Further notes on Hypera brunneipennis and its parasite, Bathyplectes curculionis. [76] 46: 1114. **Ehara, S.**—A comparative study of spermatheca in some local populations in Epilachna pustulose and E. vigintioctomaculata. [J. Fac. Sci., Hokkaido Univ., Ser. VI] 11: 401–09, ill. **Eidt, D. C.**—European wireworms in Canada with particular reference to Nova Scotian infestations. [43] 85: 408–14. **Fraenkel & Chang.**—(See Anatomy.) **Glaçon, S.**—Sur le cycle évolutif de quelques Speonomus (Bathysciinae) cavernicoles. [2] 238: 398–400, 1954. **Heyrovsky, L.**—Oncideres boliviana sp. n. ex Bolivia. (Ceramb.) [45] 49: 44–45, 1952. **Hincks, W. D.**—The Passalidae of El Salvador. [Senckenbergiana] 34: 29–35, ill. (*). **Horion, A.**—Faunistik der mitteleuropäischen käfer. Bd. III. Munchen, E. Reitter, 340 p., ill. DM 18. (Reviewed in [28] 3: 686–87.) **Knull, J. N.**—A new Euryptera and notes on other Cerambycidae. [106] 54: 129–30, 1954. **Lee, R. D. & R. E. Ryckman.**—Coleoptera and Diptera reared from owl nests. [36] 49: 23–24, 1954. **Luginbill, P., Jr.**—A contribution to the embryology of the May beetle. [52] 505–28, ill. **Martinez, A.**—Una nueva especie de Athyreus (Scarab. Geotrop.). [Muench. Ent. Ges., Mitt.] 43: 226–33 (S). **Monrós, F.**—Notes and synonyms in Chrysomelidae. [56] 56: 23–26, 1954. **Pallister, J. C.**—Homopterus hondurensis Darlington (Paussidae) from Yucatan, Mexico. [36] 49: 27–28, 1954. **Prevett, P. F.**—Notes on the feeding habits and life-history of Galeruca tanaceti L. (Chrysomelidae). [60] ser. 4, v. 89: 292–93, ill. **Puisségur, C.**—(See Diptera.) **Reichenbach-Klinke, H.-H.**—Der histologische aufbau des proventrikels der Adephaga und seine bedeutung für taxonomie und phylogenie. [Munch. Ent. Ges., Mitteil.] 43: 262–305, ill. **Sanderson, M. W.**—A revision of the nearctic genera of Elmidae. [82] 27: 1–13, ill., 1954 (*). **Scheerpeltz, O.**—Rindenbewohnende staphyliniden aus Guatemala. [28] 3: 600–10 (*k). **Schöning, R. v.**—Biologisch-ökologische untersuchungen an Byturus tomentosus Fabr. und fumatus

Fabr. [28] 3: 627–52, ill. **Sleeper, E. L.**—New Rhynchophora. I. (Anthribidae & Curculionidae). [106] 54: 117–25, ill., 1954. **Spilman, T. J.**—Corrections to Leng's catalogue and Gebien's Coleopterorum Catalogus: Tenebrionidae and Katalog der tenebrioniden. [101] 61: 215–16. **Tippmann, F. F.**—Studien über neotropische longicornier. I. [48] 181–228, ill. (*). **Uhmann, E.**—2. Nachtrag zu meiner arbeit über die "Praeimaginalstadien einiger mittelamerikanischer hispinae." [Ent. Blätter] 49: 169–84. **Vaurie, P.**—Revision of the genera Anchylorhynchus and Petalochilus of the Petalochilinae (Curculionidae). [13] no. 1651, 58 p., ill., 1954 (*). **Voss, E.**—Bemerkungen zu einigen in Guatemala gesammelten cossoninen. [28] 3: 611–15, ill. (*k). —Curculionidae: Oxycoryninae, Belinae, Archolabinae, Attelabinae, Apoderinae. [Col. Cat. Suppl.] pts. 144 & 110, 19 & 32 pp. **Watson, W. Y.**—Two new species of Coccinellidae. [43] 86: 45–47, ill., 1954. **Wolfrum, P.**—Anthribidae. [Col. Catalogus, Suppl.] pt. 102, 63 p. —Neue anthribiden aus der Zoologischen staatssammlung München. [Mitteil. Munch. Ent. Ges.] 43: 314–16 (S).

HYMENOPTERA—Baldwin & House.—Sawflies. (See Anatomy.) **Bier, K.**—Über den einfluss der königin auf die arbeiterinnen fertilität im ameisenstaat. [Insectes Sociaux, Paris] 1: 1–19, ill., 1954. **Bird, F. T.**—The use of a virus disease in the biological control of the European pine sawfly, Neodiprion sertifer (Geoffr.) [43] 85: 437–46. **& M. M. Whalen.**—A virus disease of the European pine sawfly, Neodiprion sertifer (Geoffr.) [43] 85: 433–37, ill. **Bohart, G. E.**—Honey bees attacked at their hive entrance by the wasp Philanthus flavifrons Cresson. [56] 56: 26–27, 1954. **Brown, W. L., Jr.**—The neotropical species of the ant genus Strumigenys Fr. Smith: group of elongata Roger. [101] 61: 189–99. —Remarks on the internal phylogeny and subfamily classification of the family Formicidae. [Insectes Sociaux, Paris] 1: 21–31, 1954. **Cook, T. W.**—The ants of California. Palo Alto, Calif. Pacific Books, 1953. xvi, 462 p., ill. Price $10.00. (Reviewed by G. C. Wheeler [52] 46: 618–19.) **Creighton, W. S.**—A new subspecies of Xenomyrmex stolli from northeastern Mexico (Formicidae). [13] no. 1634, 5 p., ill. —The rediscovery of Leptothorax silvestrii (Santschi) (Formicidae). [13] no. 1635, 7 p., ill. **DeBach, P.**—Thysanus flavopalliatus (Ashm.) parasitic on Comperiella bifasciata How. in California red scale. [76] 46: 1112. **Dietrick & van den Bosch.** —(See Coleoptera.) **Domenichini, G.**—Studio sulla mor-

fologia dell'addome degli Hymenoptera Chalcidoidea. [Boll. Zool. Agrar. e Bachi.] 19: 183–298, ill. **Dondale, C. D.**—Biology of Agathis laticinctus (Cress.) (Braconidae), a parasite of the eye-spotted bud moth, in Nova Scotia. [43] 86: 40–44, ill., 1954. **Evans, H. E.**—The Mexican species of the genus Pompilus. [52] 46: 529–43, ill. (*). **Gregg, R. E.**—The soldier caste of Pheidole (Ceratopheidole) clydei Gregg (Formicidae). [13] no. 1637, 7 p., ill. **Haskins & Wheldon.**—(See Anatomy.) **Ivanova-Kazac, O. M.**—(See Anatomy.) **King, R. L. & R. M. Sallee.**—On the duration of nests of Formica obscuripes Forel. [Proc. Iowa Acad. Sci.] 60: 656–59, 1954. **Krombein, K. V.**—A Camposomeris new to the New York State list (Scoliidae). [36] 49: 28, 1954. —The wasps and bees of the Bimini Island group, Bahamas, British West Indies (Aculeata). [13] no. 1633, 29 p., ill. (*). —Wasps collected at Lost River state park, West Virginia in 1953 (Aculeata). [36] 49: 1–7, 1954. **Lavie, P.**—(See Anatomy.) **Lecomte, J.**—Essai d'une analyse causale du comportement agressif des ouvrières d'abeilles (Apis melligica). [Insectes Sociaux, Paris] 1: 49–57, 1954. **MacGillivray, M. E. & P. R. Spicer.**—Aphid parasites collected in New Brunswick in 1950. [43] 85: 423–31. **Michener, C. D.**—A genus of bees new to the Illinois region. [82] 27: 13, 1954. **Muesebeck, C. F. W.**—Three new mealybug parasites of the genus Allotropa (Platygasteridae). [36] 49: 18–21, ill., 1954. **Narayanan, E. S. & K. Lal.**—Studies on chalcid egg parasites of Pyrilla spp. occurring in Delhi. [Indian J. Ent.] 15: 173–79. **Oertel & others.**—(See Anatomy.) **Pain, J.**—(See Anatomy.) **Pasteels, J.**—Prodromes d'une faune des Tenthredinoidea de l'Afrique noire. I. Argidae. [Mem. Soc. Ent. Belgique] 26: 1–128, ill. **Pielou & Glasser.**—(See Anatomy.) **Sakagami, S. F.**—Arbeitsteilung der arbeiterinnen in einem zwergvolk, bestehend aus gleichaltrigen volksgenossen. Beiträge zur biologie des binenvolkes Apis mellifera L., II. [J. Fac. Sci., Hokkaido Univ., Ser. VI] 11: 343–400, ill. **Smith, M. R.**—A new Camponotus in California apparently inhabiting live oak, Quercus sp. (Formicidae). [101] 61: 211–14. **Smith, M. R.**—A new name for Martia Forel. [36] 49: 17, 1954. **Wheldon & Haskins.**—(See Anatomy.) **Wilson, E. O.**—The ecology of some North American dacetine ants. [52] 46: 479–95. —A new interpretation of the frequency curves associated with ant polymorphism. [Insectes Sociaux, Paris] 1: 75–80, 1954.

List of Titles of Publications Referred to by Numbers in Entomological Literature in Entomological News.

1. Academia Brasileira de Ciencias, Anais. Rio de Janeiro.
2. Académie des Sciences, Comptes Rendus. Paris.
3. Academy of Natural Sciences of Philadelphia. Notulae Naturae.
4. Academy of Natural Sciences of Philadelphia. Proceedings.
5. Acta Biologica Venezuelica. Caracas.
6. Acta Biotheoretica. Leiden, Netherlands.
7. Acta Zoologica (Int. tidskrift för Zoologi). Stockholm.
8. Acta Zoologica Lilloana. Tucuman, Argentina.
9. American Entomological Society, Transactions. Philadelphia.
10. American Journal of Tropical Medicine & Hygiene. Baltimore, Md.
11. American Microscopical Society, Transactions. Menasha, Wisc.
12. American Midland Naturalist. Notre Dame, Ind.
13. American Museum Novitates. New York.
14. American Museum of Natural History, Bulletin. New York.
15. American Naturalist. Lancaster, Pa.
16. Anatomical Record. Philadelphia.
17. Annales de Parasitologie humaine et comparée. Paris.
18. Annales des Sciences Naturelles, Zoologie. Paris.
19. Annals and Magazine of Natural History. London.
20. Annals of Applied Biology. London.
21. Annals of Tropical Medicine and Parasitology. Liverpool.
22. Anti-locust Bulletin. London.
23. Archives de Zoologie Expérimentale et Générale. Paris.
24. Archives de Zoologie Expérimentale et Générale. Notes et Revue.
25. Arkiv för Zoologi. K. Svenska Vetenskapsakademien, Stockholm.
26. Arthropoda. Asoc. Argent. Artropodologia. Buenos Aires.
27. Australian Journal of Zoology. Canberra.
28. Beiträge zur Entomologie (Deutsch. Ent. Inst.) Berlin.
29. Beiträge zur Fauna Perus. Jena.
30. Biological Bulletin. Woods Hole, Mass.
31. Biological Society of Washington, Proceedings. Washington, D. C.
32. Boletin de Entomologia Venezolana. Caracas.
33. Bombay Natural History Society, Journal.
34. Bonner Zoologische Beiträge. Bonn, Germany.
35. British Museum (Nat. Hist.), Bulletin. Entomology.
36. Brooklyn Entomological Society, Bulletin.
37. Broteria, Ser. trimestral. Lisbon, Portugal.
38. Buenos Aires. Instituto Nac. Investig. Ciencias Nat. Zoologica.
39. Bulletin Biologique de la France et de la Belgique. Paris.
40. Bulletin of Entomological Research. London.
41. California Insect Survey, Bulletin. Berkeley, Cal.
42. California Univ. Publications in Entomology. Berkeley.
43. Canadian Entomologist. Ottawa, Ont.
44. Canadian Journal of Zoology. Ottawa, Canada.
45. Ceskoslovenska Spolecnost Ent., Casopis. (Acta Soc. Ent.) Prague.
46. Ceylon Journal of Science, Sect. B. Colombo.
47. Coleopterists' Bulletin. Arlington, Va.
48. Dusenia. Curitiba, Parana, Brazil.
49. Ecological Monographs. Durham, N. C.
50. Ecology. Durham, N. C.
51. Entomologica Americana. Brooklyn Ent. Soc.
52. Entomological Society of America, Annals. Columbus, Ohio.

53. Entomological Society of British Columbia, Proceedings. Vernon.
54. Entomological Society of Ontario, Annual Report. Guelph.
55. Entomological Society of Southern Africa, Journal. Pretoria.
56. Entomological Society of Washington, Proceedings. Washington, D. C.
57. Entomologische Berichten. (Ned. Ent. Ver.) Amsterdam.
58. The Entomologist. London.
59. L'Entomologiste. Paris.
60. Entomologist's Monthly Magazine. London.
61. Eos; Revista Española de Entomologia. Madrid.
62. Evolution. New York.
63. Faune de l'Union Française (Formerly Faune de l'Empire Français).
64. Florida Entomologist. Gainesville.
65. Folia Universitaria. Cochabamba, Bolivia.
66. Great Basin Naturalist. Provo, Utah.
67. Harvard Museum of Comparative Zool. Breviora. Cambridge, Mass.
68. Harvard Museum of Comparative Zoology, Bulletin. Cambridge, Mass.
69. Hawaiian Entomological Society, Proceedings. Honolulu.
70. Hilgardia (California Agr. Expt. Sta.). Berkeley.
71. Illinois State Academy of Sciences, Transactions. Springfield.
72. Institut Scientifique de Madagascar, Mémoires, Ser. E. Tananarive.
73. Iowa State College Journal of Science. Ames.
74. Journal of Animal Ecology. London.
75. Journal of Cellular and Comparative Physiology. Philadelphia.
76. Journal of Economic Entomology. Menasha, Wisconsin.
77. Journal of Experimental Biology. London.
78. Journal of Experimental Zoology. Philadelphia.
79. Journal of Morphology. Philadelphia.
80. Journal of Parasitology. Lancaster, Pa.
81. Kansas Academy of Sciences, Transactions. Manhattan.
82. Kansas Entomological Society, Journal. Lawrence.
83. Kansas University. Science Bulletins. Lawrence.
84. Lambillionea (Union Ent. Belge). Brussels.
85. Lepidopterists' News. New Haven, Conn.
86. Louisiana Academy of Sciences, Proceedings. New Orleans.
87. Mexico. Escuela Nacional de Ciencias Biologicas, Anales.
88. Mexico Univ. Instituto de Biologia, Anales. Mexico City.
89. Michigan Univ. Museum of Zoology, Occasional Papers. Ann Arbor.
90. Microentomology. Stanford University, California.
91. Mocambique; Documentario Trimestral. Lourenço Marques.
92. Mosquito News. New Brunswick, N. J.
93. Musei Zoologici Polonici, Annales. Warsaw, Poland.
94. Musei Zoologici Polonici. Fragmenta Faunistica. Warsaw, Poland.
95. Naples Univ. Instituto e Museo Zoologico, Annuario.
96. National Academy of Sciences, Proceedings. Washington, D. C.
97. Natural History Miscellanea (Chicago Academy of Sciences).
98. Nature. London.
99. Naturforschende Gesellschaft Zurich, Vierteljahrsschrift.
100. Die Naturwissenschaften. Berlin.
101. New York Entomological Society, Journal.
102. Norsk Entomologisk Tidsskrift. Oslo.
103. Notulae Entomologicae. Helsingfors, Finland.
104. Oesterreiche Zoologische Zeitschrift. Vienna.
105. Office National Anti-acridien, Bulletin. Paris.
106. Ohio Journal of Science. Columbus.
107. Oikos; Acta Ecologica Scandinavica. Copenhagen, Denmark.
108. Opuscula Entomologica. Lund, Sweden.

109. Oyo-Kontyu (Nippon Society of Applied Entomology). Tokyo.
110. Pacific Science. Honolulu.
111. Pan-Pacific Entomologist. San Francisco, Cal.
112. Parasitology. London.
113. Physiological Zoology. Chicago.
114. Polskie Pismo Entomologiczne. Wroclaw, Poland.
115. Psyche; A Journal of Entomology. Cambridge, Mass.
116. Quarterly Journal of Microscopical Science. London.
117. Revista Brasileira de Biologia. Rio de Janeiro.
118. Revista de Investigaciones Agricultura. (Argent. Min. Agr.) B. A.
119. Revue Française de Lepidopterologie. Douelle, France.
120. Revue Suisse de Zoologie. Geneva, Switzerland.
121. Rio de Janeiro. Instituto Oswaldo Cruz, Memorias.
122. Rio de Janeiro. Museu Nacional do Brasil, Boletim, Zool.
123. Rivisti di Parassitologia. Rome, Italy.
124. Royal Entomological Society of London, Proceedings, Ser. A.
125. Royal Entomological Society of London, Proceedings, Ser. B.
126. Royal Entomological Society of London, Transactions.
127. Royal Society of London, Proceedings, Ser. B.
128. São Paulo, Brazil. Depart. Zool., Secr. Agr., Papéis Avulsos.
129. São Paulo, Brazil. Instituto Biologico, Arquivos.
130. Schweizerische Entomologische Gesellschaft, Mitteilungen. Bern.
131. Smithsonian Miscellaneous Collections. Washington, D. C.
132. Sociedad Cientifica Argentina, Anales. Buenos Aires.
133. Sociedad Entomológica Argentina, Revista. Buenos Aires.
134. Sociedad Mexicana de Historia Natural, Revista. Mexico City.
135. Société d'Histoire Naturelle de Toulouse, Bulletin.
136. Société Entomologique de Belgique, Bulletin et Annales. Brussels.
137. Société Entomologique de France, Annales. Paris.
138. Société Entomologique de France, Bulletin. Paris.
139. Société Fouad I d'Entomologie, Bulletin. Cairo, Egypt.
140. Société Linneenne Lyon, Bulletin Mensuel.
141. Société Zoologique de France, Bulletin. Paris.
142. Society for British Entomology, Journal. Bournemouth, England.
143. Society for British Entomology, Transactions. Bournemouth, Eng.
144. South London Entomological & Nat. Hist. Society, Proc. & Trans.
145. Southern California Academy of Sciences, Bulletin. Los Angeles.
146. Systematic Zoology. Washington, D. C.
147. Tennessee Academy of Sciences, Journal. Nashville.
148. Texas Journal of Science. College Station, Texas.
149. Tijdschrift voor Entomologie. Amsterdam.
150. Tohoku University. Science Reports, Ser. 4. Tohoku, Japan.
151. U. S. National Museum, Proceedings. Washington, D. C.
152. Washington Academy of Sciences, Journal. Washington, D. C.
153. Wasmann Journal of Biology. San Francisco, Cal.
154. Zoologica. New York.
155. Zoological Society of Bengal, Proceedings. Calcutta, India.
156. Zoological Society of London, Proceedings.
157. Zoologische Jahrbücher. Abt. Anatomie u. Ontogenie. Jena.
158. Zoologische Jahrbücher. Abt. Systematik, Ökologie u. Geogr. Jena.
159. Zoologische Jahrbücher. Abt. allg. Zoologie u. Physiologie. Jena.
160. Zoologischer Anzeiger. Leipzig.

For Your Collecting Needs . . .

BUY THE *KNOWN* BEST!

WARD'S equipment can be relied on to be of *tested* value to you. Because WARD'S has long set the standard of entomological supply, you may depend on the quality of the aids available for *all* your needs. Send for free catalog of Entomological Supplies and Equipment to *Department E 12.*

WARD'S **Natural Science Establishment, Inc.**
Serving the Natural Sciences Since 1862
3000 Ridge Road East • Rochester 9, New York

Important Mosquito Works

MOSQUITO ATLAS. Part I. The Nearctic Anopheles, important malarial vectors of the Americas, and Aedes aegypti and Culex quinquefasciata

MOSQUITO ATLAS. Part II. The more important malaria vectors of the Old World: Europe, Asia, Africa and South Pacific region

By Edward S. Ross and H. Radclyffe Roberts
Price, 60 cents each (U. S. Currency) with order, postpaid within the United States; 65 cents, foreign.

KEYS TO THE ANOPHELINE MOSQUITOES OF THE WORLD

With notes on their Identification, Distribution, Biology and Relation to Malaria. By Paul F. Russell, Lloyd E. Rozeboom and Alan Stone

Mailed on receipt of price, $2.00 U. S. Currency. Foreign Delivery $2.10.

For sale by the American Entomological Society, 1900 Race Street, Philadelphia 3, Pa., U. S. A.

MEMOIRS OF THE AMERICAN ENTOMOLOGICAL SOCIETY

The Society offers for sale the 14 numbers of this important and steadily growing series of longer monographic works, all numbers of which are still in stock.

1.—Cresson (Ezra T.)—The Cresson Types of Hymenoptera (141 pp., 1916) ..... $ 3.00

2. —Hebard (Morgan)—The Blattidae of North America, North of the Mexican Boundary (284 pp., 10 pls., 1917) 5.50

3.—Munz (Philip A.)—A Venational Study of the Suborder Zygoptera (Odonata), with Keys for the Identification of Genera (78 pp., 20 pls., 1919) 2.00

4.—Hebard (Morgan)—The Blattidae of Panama (148 pp., 60 pls., 1920) 3.00

5.—Cresson (Ezra T.)—The Type of Hymenoptera in the Academy of Natural Sciences of Philadelphia other than those of Ezra T. Cresson (90 pp., 1928) 2.00

6.—Rivnay (Ezekiel)—Revision of the Rhipiphoridae of North and Central America (Coleoptera) (68 pp., 4 pls., 1929) 2.00

7.—Leonard (Mortimer D.)—A Revision of the Dipterous Family Rhagionidae (Leptidae) in the United States and Canada (182 pp., 3 pls., 1930) 4.50

8.—Rehn (James A. G. and Rehn, John W. H.)—The Eumastacinae of southern Mexico and Central America (84 pp., 6 pls., 1934) .. 2.50

9.—Pate (V. S. L.)—The Generic Names of the Sphecoid Wasps and their type species (103 pp., 1937) 2.50

10.—Huckett (H. C.)—A Revision of the North American species belonging to the genus Pegomyia (131 pp., 9 pls., 1941) 3.00

11.—Townes (Henry K., Jr.)—Catalogue and reclassification of The Nearctic Ichneumonidae (925 pp., 1944) 15.00

12.—Phillips (Venia Tarris)—The Biology and Identification of Trypetid Larvae (161 pp., 16 pls., 1946) 5.00

13.—Braun (Annette F.)—Elachistidae of North America (Microlepidoptera) (110 pp., 26 pls., 1948) 4.50

14.—Rehn (John W. H.)—Classification of the Blattaria as indicated by their Wings (134 pp., 13 pls., 1951) 5.00

THE AMERICAN ENTOMOLOGICAL SOCIETY

1900 RACE STREET, PHILADELPHIA 3, PA.